WE CLAIM:

1. In an OFDM receiver, a method for removing a frequency offset between a transmitted signal and a received signal, said frequency offset comprising a fractional portion and an integer portion, said method comprising:

estimating said fractional portion of said frequency offset;

removing said fractional portion of said frequency offset, whereby only said integer frequency offset remains between said transmitted signal and said received signal;

estimating said integer portion of said frequency offset; and

removing said integer portion of said frequency offset, thereby removing said frequency offset between said transmitted signal and said received signal.

2. The method as claimed in claim 1, further comprising detecting I and Q for each sub-carrier of said received signal prior to performing said estimating of said integer portion of said frequency offset to provide an I and Q sequence signal, further wherein said estimating of said integer portion of said frequency offset is performed by synchronizing said I and Q sequence signal with a sequence of known coefficients.

3. The method as claimed in claim 2, wherein said synchronizing comprises detecting said sequence of known coefficients in said I and Q sequence signal.

4. The method as claimed in claim 1, wherein said removing of said fractional portion of said frequency offset is performed by multiplying said received signal with a phase correlation factor comprising said fractional frequency offset.

5. The method as claimed in claim 1, wherein said transmitted signal comprises a cyclic prefix, further comprising removing said cyclic prefix in said received signal.

6. The method as claimed in claim 2, wherein said detecting of said I and Q is performed using a Discrete Fourier Transform (DFT).

7. In an OFDM receiver, a frequency offset removing apparatus, for removing a frequency offset between a transmitted signal and a received signal, said frequency offset comprising a fractional portion and an integer portion, said apparatus comprising:

a fractional frequency offset estimation unit receiving said transmitted signal and estimating said fractional portion of said frequency offset to provide a first signal;

a fractional frequency offset removing unit receiving said transmitted signal and said first signal and removing said fractional portion of said frequency offset to provide a second signal, whereby only said integer frequency offset remains

between said transmitted signal and said received signal;

an integer frequency offset determining unit receiving said second signal and estimating said integer portion of said frequency offset in said second signal to provide a third signal; and

an integer frequency offset removing unit receiving said third signal and removing said integer portion of said frequency offset in said third signal, thereby removing said frequency offset between said transmitted signal and said received signal.

8. The apparatus as claimed in claim 7, wherein said apparatus further comprises a I and Q generation unit detecting I and Q for each sub-carrier of said second signal and providing an I and Q sequence signal, further wherein said integer frequency offset determining unit performs a synchronization of said I and Q sequence signal with a sequence of known coefficients.

9. The apparatus as claimed in claim 8, wherein said synchronizing comprises detecting said sequence of known coefficients in said I and Q sequence signal.

10. The apparatus as claimed in claim 7, wherein said fractional frequency offset removing unit multiplies said received signal with a phase correlation factor comprising said fractional frequency offset.

11. The apparatus as claimed in claim 7, wherein said transmitted signal comprises a cyclic prefix, further wherein said apparatus comprises a cyclic prefix removing unit removing said cyclic prefix of said received signal.